

Alpha Honors Geometry, Glawe  
**Division of Segments and Angles Notes (1.5)- Proofs**

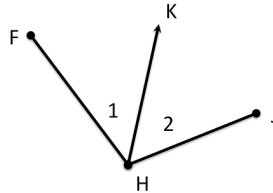
Name: \_\_\_\_\_  
 Date: \_\_\_\_\_ P: \_\_\_\_\_

Using your notes on midpoints/bisectors of segments, trisection points/trisecting a segment, angle bisectors, and angle trisectors, complete the following proofs.

Remember, it is helpful to mark your diagrams before you write your proof.

Example proofs:

- 1) Given:  $\angle 1 \cong \angle 2$   
 Prove:  $\overrightarrow{HK}$  bisects  $\angle FHJ$



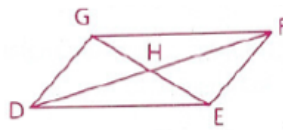
Statements	Reasons
1) $\angle 1 \cong \angle 2$	1) Given
2) $\overrightarrow{HK}$ bisects $\angle FHJ$	2) If a ray divides an angle into two congruent angles, then it bisects the angle.

- 2) Given:  $\overrightarrow{PS}$  bisects  $\angle RPO$   
 Prove:  $\angle RPS \cong \angle OPS$



Statements	Reasons
1) $\overrightarrow{PS}$ bisects $\angle RPO$	1) Given
2) $\angle RPS \cong \angle OPS$	2) If a ray bisects an angle, then it divides the angle into two congruent angles.

- 3) Given:  $\overline{DH} \cong \overline{HF}$   
 Prove: H is the midpoint of  $\overline{DF}$

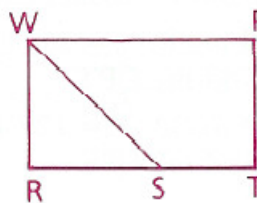


Statements	Reasons
1) $\overline{DH} \cong \overline{HF}$	1) Given
2) H is the midpoint of $\overline{DF}$	2) If a point divides a segment into two congruent segments, then it is the midpoint of the segment.

In problems 12-17, write a proof in two-column form.

12 Given:  $\overrightarrow{WS}$  bisects  $\angle RWP$ .

Prove:  $\angle RWS \cong \angle PWS$



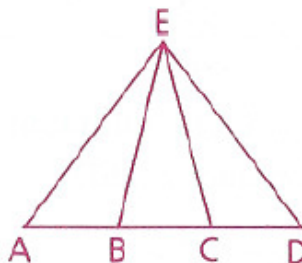
13 Given:  $\overline{XY} \cong \overline{YZ}$

Prove: Y is the midpoint of  $\overline{XZ}$ .



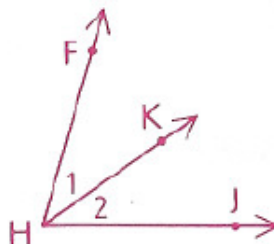
14 Given:  $\angle AEB \cong \angle BEC \cong \angle CED$

Conclusion:  $\overrightarrow{EB}$  and  $\overrightarrow{EC}$  trisect  $\angle AED$ .



15 Given:  $\angle 1 \cong \angle 2$

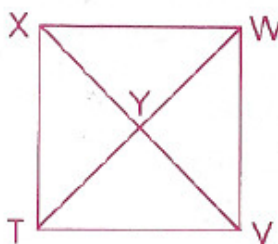
Conclusion:  $\overrightarrow{HK}$  bisects  $\angle FHJ$ .



16 Given:  $\angle TXW$  is a right angle.

$\angle TYV$  is a right angle.

Prove:  $\angle TXW \cong \angle TYV$



17 Given: B is the midpoint of  $\overline{AC}$ .

Prove:  $\overline{AB} \cong \overline{BC}$

